1. A communication system for distributed Raman amplification of optical signals, the communication system comprising:

a first fiber span;

a second fiber span; and

an amplifier system configured to generate a first light beam, split the first light beam into a first portion of the first light beam and a second portion of the first light beam, transfer the first portion of the first light beam onto the first fiber span to backward propagate over the first fiber span, and transfer the second portion of the first light beam onto the second fiber span to forward propagate over the second fiber span.

2. The communication system of claim 1 wherein the amplifier system comprises:

a first pump system configured to generate and transmit the first light beam; and

a first splitter system configured to receive the first light beam, split the first light beam into the first portion of the first light beam and the second portion of the first light beam, transfer the first portion of the first light beam onto the first fiber span to backward propagate over the first fiber span, and transfer the second portion of the first light beam onto the second fiber span to forward propagate over the second fiber span.

3. The communication system of claim 2 further comprising:

a third fiber span;

a second pump system configured to generate a second light beam and transmit the second light beam; and

a second splitter system configured to receive the second light beam from the second pump system, split the second light beam into a first portion of the second light beam and a second portion of the second light beam, transfer the first portion of the second light beam onto the second fiber span to backward propagate over the second fiber span, and transfer the second portion of the second light beam onto the third fiber span to forward propagate over the third fiber span.

4. The communication system of claim 3 wherein the first pump system and the second pump system are configured to generate at least a 6 dB gain in the second fiber span.

5. The communication system of claim 2 wherein the first pump system comprises at least one laser diode configured to generate the first light beam.

6. The communication system of claim 2 wherein the first splitter system comprises about a 3 dB splitter.

7. The communication system of claim 1 wherein the first fiber span comprises a span of transmission fiber having a length between about 50 km and 120 km.

8. The communication system of claim 1 wherein the first portion of the first light beam comprises between about 40 to 60 percent of the power of the first light beam.

9. The communication system of claim 1 wherein the power of the first portion of the first light beam is less than about 300 mW.

10. The communication system of claim 1 wherein the power of the second portion of the first light beam is less than about 300 mW.

11. A method of operating a communication system for distributed Raman amplification of optical signals, wherein the communication system comprises a first fiber span, a second fiber span, and an amplifier system, the method comprising:

receiving the optical signals in the first fiber span and the second fiber span; and

in the amplifier system,

generating a first light beam,

splitting the first light beam into a first portion of the first light beam and a second portion of the first light beam,

transferring the first portion of the first light beam onto the first fiber span to backward propagate over the first fiber span, and

transferring the second portion of the first light beam onto the second fiber span to forward propagate over the second fiber span.

12. The method of claim 11 wherein the amplifier system comprises a first pump system and a first splitter system, and wherein the method comprises:

in the first pump system, generating the first light beam and transmitting the first light beam to the first splitter system; and

in the first splitter system,

receiving the first light beam from the first pump system,

splitting the first light beam into the first portion of the first light beam and the second portion of the first light beam,

transferring the first portion of the first light beam onto the first fiber span to backward propagate over the first fiber span, and

transferring the second portion of the first light beam onto the second fiber span to forward propagate over the second fiber span.

13. The method of claim 12 wherein the communication system further comprises a third fiber span, a second pump system, and a second splitter system, and wherein the method further comprises:

in the second pump system, generating a second light beam and transmitting the second light beam; and

in the second splitter system,

receiving the second light beam from the second pump system,

splitting the second light beam into a first portion of the second light beam and a second portion of the second light beam,

transferring the first portion of the second light beam onto the second fiber span to backward propagate over the second fiber span, and

transferring the second portion of the second light beam onto the third fiber span to forward propagate over the third fiber span.

14. The method of claim 13 wherein the first pump system and the second pump system are configured to generate at least a 6 dB gain in the second fiber span.

15. The method of claim 12 wherein the first splitter system comprises about a 3 dB splitter.

16. The method of claim 12 wherein the first pump system comprises at least one laser diode configured to generate the first light beam.

17. The method of claim 11 wherein the first fiber span comprises a span of transmission fiber having a length between about 50 km and 120 km.

18. The method of claim 11 wherein the first portion of the first light beam generated by the first splitter system comprises between about 40 to 60 percent of the power of the first light beam.

19. The method of claim 11 wherein the power of the first portion of the first light beam is less than about 300 mW.

20. The method of claim 11 wherein the power of the second portion of the first light beam is less than about 300 mW.